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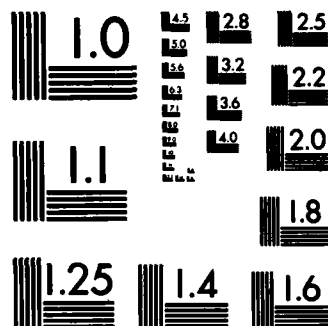
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**UNCLASSIFIED TECHNICAL REPORTS, SPECIAL REPORTS,
AND TECHNICAL NOTES: FY 1982**

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FOREWORD

This report lists all unclassified technical reports, special reports, and technical notes that were published by this Center in FY 1982. Publications in each category are listed in chronological order under seven areas: manpower management, personnel administration, organization management, education and training, human performance, R&D methods and techniques, and bibliographies, reviews, and summaries.

Qualified users may request copies of technical reports from the Defense Technical Information Center, Cameron Station, Alexandria, VA 22314 (Telephone: Commercial (202) 274-7633 or Autovon 284-7633). Technical reports listed that have unlimited distribution can also be obtained from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161 (Telephone: Commercial (703) 487-4650 (no autovon)).

Occasionally, special reports and technical notes have limited distribution and, in some cases, are not available from DTIC, either because they are of very limited interest or the sponsor desires to control their availability.

JAMES F. KELLY, JR.
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DEFINITIONS

MANPOWER MANAGEMENT

The manpower management area focuses on the design and development of manpower management systems; specifically, the application of computerized planning models. It includes (1) the forecasting manpower requirements and personnel inventories, (2) developing models for personnel compensation and costs, (3) conducting manpower policy analyses, and (4) developing computer simulations of manpower systems. This research exploits the technology of computer-managed large-scale data bases.

PERSONNEL ADMINISTRATION

The personnel administration area concerns the (1) development, testing, and evaluation of the personnel accessioning system, and (2) the development of techniques, procedures, and systems for recruiting, selecting, classifying, assigning, assessing, and advancing personnel. It focuses on three major areas: (1) applying computer-adaptive testing technology in the selection and classification of personnel, (2) evaluating the performance appraisal system as it relates to classification and the personnel advancement system, and (3) identifying occupational structures that provide the link between the improved classification and performance assessment systems.

ORGANIZATION MANAGEMENT

The organization management area concerns the management of Navy personnel--both military and civilian--by effecting organizational changes. It focuses on improving productivity and enhancing career development by applying behavioral technologies. Areas related to productivity include operational readiness, productivity enhancement, and other measures of organizational effectiveness; those related to individual career development include attitude assessment and retention management through organizational initiatives.

EDUCATION AND TRAINING

The education and training area is directed toward providing the Navy with (1) job-related and cost-effective flexible training systems, and (2) personnel who possess the required level of complex skills, knowledges, and abilities. It focuses on three major areas: (1) developing and applying training technology, including instructional design, computer-based instruction, team training, on-site and shipboard training, skill and knowledge retention, and basic skills, (2) improving training management, including training systems evaluation and instructional delivery systems, and (3) advancing the technology base in artificial intelligence and cognitive science.

HUMAN PERFORMANCE

The human performance area is directed toward providing human factors solutions to engineering and organizational problems. It focuses on four major areas: (1) improving the interaction between people and machines, (2) determining how individuals process information to improve their tactical performance, (3) improving existing work environments by applying job design techniques, job performance aids, and human factors engineering methods, and (4) conducting R&D on technologies pertinent to information processing and decision making, such as artificial intelligence, robotics, and innovative performance measurement techniques.

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MANPOWER MANAGEMENT

TECHNICAL REPORTS

Supply Workload Implications of Increased Deployment to the Indian Ocean. TR 82-1.
R. P. Woon. October 1981. (AD-A106 994)

A Pacific Fleet Logistics Model has been developed to forecast the changes in workload on the Navy's Pacific supply centers and depots caused by changes in fleet size, fleet configuration, and deployment pattern. This report describes the verification and validation of the model by using actual homeporting and employment schedules. Projected supply workload results are presented to determine the effects of increased deployment to the Indian Ocean.

Methods for Adjusting Military Pay. TR 82-12. M. D. Chipman, G. Hutchins, and M. W. Rowe. October 1981. (AD-A108 086)

Since 1967, military pay has been linked or "indexed" to changes in General Schedule (GS) salaries via the professional, administrative, technical, and clerical (PATC) index. This effort compares the PATC index to other wage indexes using a set of criteria. They include the similarity of jobs in the military to those in the wage indexes, the timeliness and quality of data contained in the indexes, and the ability of the indexes to maintain real purchasing power. Several existing wage indexes, predominately blue collar, were found to be more appropriate guides for adjusting pay than was the PATC index.

Labor Market Analysis for Equal Employment Opportunity (EEO) Planning. TR 82-13.
D. M. Atwater, R. J. Niehaus, and J. A. Sheridan. November 1981. (AD-A107 938)

The development of numerical measures for equal employment opportunity (EEO) policy analysis must include knowledge of the labor market external to an organization. In addition to comparisons with more general civilian labor force (CLF) data, comparisons are needed with the relevant labor force (RLF) data. The use of these measurements in connection with Title VII of the Civil Rights Act of 1964 touches on the most difficult and fundamental issues of EEO. This report concentrates on the computational issues of estimating relevant external labor markets by race or national origin and sex (RNS) groups for the U.S. Navy civilian work force. Also included is an initial set of local and national RLF data for selected Navy U.S. civilian labor markets.

Certain Places Pay: Current Inconsistencies and Suggested Alternatives. TR 82-17.
J. Dorsey, R. King, M. W. Rowe, and M. D. Chipman. November 1981. (AD-A109 021)

Certain Places Pay (CPP) is provided to enlisted personnel serving at specified locations outside the contiguous United States as a morale factor and in recognition of the greater-than-normal rigors of service at such locations. Because the CPP rates have not changed since 1949, the pay has declined from about 10 percent of basic pay to less than 2 percent currently. To assist OP-01 in making or supporting informed decisions designed to improve the CPP system, this effort evaluated the cost, effectiveness, and administrative burden of the existing CPP system relative to a set of six alternative pay schemes.

MANPOWER MANAGEMENT (Continued)

Life-cycle Maintenance Manpower Requirements for the F-18A: An Application of the T-Bar Methodology. TR 82-24. January 1982. M. C. Smith, G. Chernowitz, and J. Ciccotti. (AD-B062 346)

This report describes the development of a forecast of the total life-cycle maintenance manpower and skill requirements of the F-18A aircraft. The appendices include the raw maintenance and utilization historical data used in the forecast. The mathematics of the forecast are found in NPRDC Special Report 80-11.

Ship-II Simulation Model: Validation and Evaluation. TR 82-26. January 1982. M. C. Smith. (AD-A110 696)

The SHIP-II computer simulation model, developed to assess the adequacy of manning suites for Navy ships, has been extensively revised since its initial development (1962). Prior to this effort/report, no systematic verification and validation of the model has been conducted and documented. This report describes the results of these tasks. It was determined that the SHIP-II model is not an accurate tool for the examination of manpower requirements and manning policies for Navy ships.

A Model for Estimating Navy Manpower in Base Operating Support Programs. TR 82-29. February 1982. P. Hudak, R. King, and C. Rhodes. (AD-A111 538)

The primary objective of this effort was to develop manpower estimating equations to forecast aggregate requirements within the base operating support (BOS) sector of Navy manpower. These statistical relationships should contain direct measures of the ship or aircraft forces that are resident at BOS locales. An extensive data collection effort was conducted so that data on the physical size and population supported by a given BOS activity could be matched with data describing the workload imposed by ship and aircraft forces resident at the activity. Multiple regression analysis was then used to obtain estimating equations that are both statistically sound and intuitively appealing. Results showed that, for the major BOS categories of naval stations and naval air stations, manpower requirements were statistically related to both the manpower of the associated ship or aircraft forces, respectively, as well as to the tenant population of the "host" BOS activity. These findings did not vary by fleet nor were there significant differences among the various types (fleet, reserve, training) of air stations.

Manpower Availability Projections for Selected Constrained Ratings--FY81-87. TR 82-39. March 1982. E. A. Koehler. (AD-A113 310)

Personnel in their second enlistment, who comprise the bulk of the Navy's experienced personnel pool, are in seriously short supply for many ratings. As a result, many Navy systems are being manned and maintained by personnel with skills and experience below that necessary for optimum performance. This report identifies selected Navy enlisted ratings having a 20 percent or greater shortfall for any year (1981-1987). Manpower availability data were developed using manpower requirements forecasting and availability projections developed and maintained by the Chief of Naval Operations. The data base used is predicated on the growth to a 600-ship Navy by FY 1989.

MANPOWER MANAGEMENT (Continued)

Assessing the Personnel Geographic Stability Program for Boiler Technicians. TR 82-40. March 1982. T. A. Blanco and P. G. Buletza. (AD-A113 197)

The objective of this report is to document development efforts to assess the Navy's capability for a personnel geographic stability (PEGS) program. Work to date has focused on a single rating--boiler technician (BT)--with particular attention being given to the complexities of the problem. A set of assumptions were developed to form a "homesteading strategy" based on considerations of Navy-wide manning balance, CNO priority manning objectives, regional billet structure, and sea-shore rotation equilibrium.

The Reallocation of Military Pay Increases. TR 82-49. June 1982. W. W. Wilcox. (AD-A117 584)

Pay reallocation and pay targeting are administrative mechanisms available for the manipulation of the overall size or relative distribution of military pay increases. To better understand the budgetary and pay rate consequences of reallocation, NAVPERSRANDCEN constructed a computer-based model called REALL. The long-term and immediate impact of various types of basic pay reallocation on pay rates and budgetary costs were examined. The current basic pay resulting from the FY77 and FY78 reallocations to BAQ and the FY82 pay grade targeting were contrasted to estimates derived from simple, across-the-board, nonreallocated pay increases. A similar exercise is displayed for costs with particular emphasis on "drag along" cost elements.

SPECIAL REPORTS

Forecasting Staffing Needs in a Navy Research Laboratory. SR 82-7. M. D. Chipman. November 1981. (AD-A108 380)

Like many government organizations, NAVPERSRANDCEN faces restrictions regarding the number of personnel it may hire. To justify its existing billets or positions, NAVPERSRANDCEN must demonstrate that it is effectively using its current allocation of billets. This, in turn, requires accurate predictions of future attrition so that the lead time associated with recruiting and hiring new personnel can precede personnel losses without incurring long periods of billet vacancy. The purpose of this effort was to provide a methodology capable of forecasting at the lowest level of aggregation possible the number and type of personnel vacancies far enough in advance to allow time for recruiting and hiring. Findings indicated that NAVPERSRANDCEN attrition can be forecast with a sufficient degree of accuracy.

The Structured Accession Planning System for Officers (STRAP-O): A System for Assessing the Feasibility of Navy Officer Manpower Plans. SR 82-26. June 1982. M. W. Rowe. (AD-A116 830)

The structured accession planning system for officers (STRAP-O) is a set of models for determining the feasibility of proposed manpower plans or programs and indicating directions likely to achieve those plans. STRAP-O integrates accession and promotion planning functions with manpower requirements both technically and organizationally. This report describes the system's components, its architecture, the flow of information, and outputs.

MANPOWER MANAGEMENT (Continued)

TECHNICAL NOTE

An Investigation of Nondesignated Personnel Flows. TN 82-19. June 1982. S. J. Pinciario.

Navy planners need to understand personnel flows from the bottom three pay grades into the ratings in order to design policies to meet future requirements for skilled personnel. Investigations into historical flows have been hampered in the past by the lack of suitable longitudinal data. Such data are now available, providing the basis for cohort trackings of personnel in the bottom three pay grades. This report provides historical flow rates derived for various categories of nondesignated personnel. The findings provide a foundation for the development of a mathematical model capable of projecting begin-year nondesignated inventories into end-year rated inventories.

PERSONNEL ADMINISTRATION

TECHNICAL REPORTS

Prediction of Job Performance: Review of Military Studies. TR 82-37. March 1982. R. Vineberg and J. N. Joyner. (AD-A113 208)

Literature pertaining to prediction of enlisted military job performance (1952-1980) (excluding studies in which training performance or reenlistment is the criterion) was reviewed. Results indicated that, for the great majority of jobs, job knowledge tests appear to provide the most practical method of objective measurement. Also, because job sample tests are very expensive to construct and administer, their use is not practical unless the job is extremely costly or critical. Finally, use of supervisors' ratings as the only measure of job performance should be restricted to jobs for which motivation, social skill, and response to situational requirements are the only attributes worth measuring. Two promising approaches to improved prediction are the selective use of miniaturized training and assessment centers and the use of self-paced training performance as a predictor.

Development of an Occupational Strength Test Battery (STB). TR 82-42. April 1982. D. W. Robertson. (AD-A114 247)

A strength test battery (STB) was developed to predict performance on Navy job tasks with substantial muscular demands. The STB includes 14 tests representing four strength factors--static, dynamic, power, and anthropometric. The STB was administered to men and women recruits and evaluated for battery administration time, differences in men's and women's scores, relationship between strength and body weight, sensitivity of the STB to measure changes resulting from physical conditioning, and the tests' validity and reliability. Results indicated that the STB provides a safe, quick, inexpensive method for measuring an applicant's strength capability and for monitoring strength and body weight changes that result from physical conditioning activities. The STB should be evaluated further for occupational classification purposes.

Computerized Adaptive Testing System Design: Preliminary Design Considerations. TR 82-52. July 1982. P. R. Croll. (AD-A118 495)

A functional design model for a computerized adaptive testing (CAT) system was developed and presented through a series of hierarchy plus input-process-output (HIPO) diagrams. System functions were translated into system structure; specifically, into 34 software components. Implementation of the design in a physical system was addressed through brief discussions of hardware, software, interfaces, and personnel requirements. Further steps in CAT system development were identified, including design testing, evaluation, and refinement. Both micro- and minicomputer-based hardware configurations were evaluated and found capable of supporting test administration and station monitoring. The functional design model and the system structure specified in this report were recommended for the DoD CAT system.

Validation of Naval Academy Selection Procedures for Female Midshipmen. TR 82-54. July 1982. I. Neumann and N. M. Abrahams. (AD-A118 484)

Current U.S. Naval Academy selection procedures were developed for the exclusively male population that existed there before July 1976. This research was initiated to assess the appropriateness of these procedures for female midshipmen

PERSONNEL ADMINISTRATION (Continued)

and to revise the procedures if the system was found ineffective. Male and female midshipmen in the classes of 1980 through 1983 were compared to determine whether differences existed in mean predictor and performance scores and to assess the validity of predictors. The high voluntary registration rate for females, which was ineffectively predicted, led to the construction and validation of an interest inventory disenrollment scale that would better identify female midshipmen who would resign from the Naval Academy. Two experimental scales were constructed that were considerably more effective than the operational disenrollment scale. However, these scales were negatively related to academic and military performance.

Development and Evaluation of Strong-Campbell Interest Inventory Scales to Measure Interests of Military Occupational Specialties of the Marine Corps. TR 82-60. August 1982. J. C. Hansen. (AD-A118 785)

The purpose of this investigation was to develop and evaluate scales, using the item pool of the Strong-Campbell Interest Inventory (SCII) to measure interests of 12 specified MOSs. The empirical method of contrast groups was used for scale development using 4 different reference samples and 11 MOS criterion samples; these comparisons extracted sufficient items for 39 scales. Reliability and validity of each scale were assessed in three phases. Results indicated that useful scales could be developed for most of the MOSs (except infantry and artillery) if sufficient samples could be obtained. It was recommended that an attempt be made to collect larger samples for those scales developed with small sample sizes.

The Intentions of Men 23 to 29 Years Old to Join the Military: Results of a National Survey. TR 82-62. September 1982. J. I. Borack. (AD-A119 611)

The population of 23-29 year olds will increase during the early 1980s and remain above 1980 levels throughout the decade. The population of the prime enlistment pool, 17-21 year old males, will decrease sharply during the 1980s and beyond. Due to the demographic shift, increased consideration may be given toward augmenting this traditional supply source by recruiting somewhat older individuals. Therefore, a survey was conducted to assess the interest of 23-29 year old men in joining the military under present conditions and under monetary (bonuses, educational incentives, lateral entry pay) and nonmonetary (training, job, location guarantees, contract length options) incentives. Findings are presented detailing interest levels under current conditions and under each incentive. The composition of the pool of interested men, uninterested men, and those interested only under incentive options is assessed in terms of its demographic components.

SPECIAL REPORTS

Postenlistment Mental Qualification Verification: Calendar Year 1979. SR 82-9. December 1981. E. F. Alf and J. W. Stapleton. (AD-A109 996)

The mental qualifications of entering recruits were verified by retesting approximately 10,000 recruits who had been first tested in Calendar Year 1979, prior to entering the Navy. On retesting, there was a small but significant drop of scores on the Armed Services Vocational Aptitude Battery (ASVAB) subtests used primarily for selection and classification. Unusually large discrepancies for some Armed Forces Examining and Entrance Stations and Navy Recruiting Districts indicated that some

PERSONNEL ADMINISTRATION (Continued)

test compromise may exist. Furthermore, the norms for ASVAB Forms 5, 6, and 7 were not comparable.

Selecting Qualified Candidates to the United States Naval Academy Using College Aptitude Test Scores. SR 82-20. March 1982. M. B. Cowen and N. M. Abrahams. (AD-A113 579)

The Naval Academy has a continuing need to select high quality applicants. Comparisons were made of the relative validity of the highest college aptitude test score (HIGHCATS) and the average college aptitude test score (AVECATS) in the selection of applicants to the Naval Academy. On a sample of 588 midshipmen for the Class of 1983, it was found that: (1) the validity of the AVECATS was significantly higher than that of the HIGHCATS, (2) rank order position changed when midshipmen were evaluated on the AVECATS instead of the HIGHCATS, and (3) more applicants were predicted to attain an academic quality point ratio of 2.7 when the AVECATS was used as the selection score instead of the HIGHCATS. Thus, applicants should be selected on their AVECATS instead of their HIGHCATS.

Identification of Strategies for Penetrating the 19-to-23-year-old Recruiting Market. SR 82-22. April 1982. A. P. Romanczuk, B. E. Goodstadt, C. L. Colby, and K. Fernandes. (AD-A114 261)

Nine marketing strategies were evaluated for their potential effectiveness in attracting and enlisting a target population of 19-to-23-year old, unmarried, non-prior-service males with high school diplomas. The evaluation was based on information obtained from in-depth interviews with recruiters, members of the target population, and personnel from a variety of civilian and military agencies. The two marketing strategies identified as having the greatest potential were peer networking through expanded use of the Navy's Recruiting Assistance Program and direct mail marketing focusing on the needs and interests of target group members. These strategies should be tested and evaluated to determine their effectiveness in attracting somewhat older prospects and enlisting them in the Navy.

TECHNICAL NOTES

Marine Corps Job Performance Test for Three Enlisted Specialties. TN 82-20. June 1982. D. J. Chesler, C. R. Bilinski, and M. A. Hamovitch. (AD-A117 700)

Hands-on and written job performance tests were developed for three Marine Corps enlisted specialties: rifleman (MOS 0311), organizational automotive mechanic (MOS 3521), and ground radio repairer (MOS 2841). The tests were field tested to assess reliability and logistical feasibility. Headquarters, Marine Corps and the Marine Corps Operations Analysis Group will use these tests to determine the feasibility of validating the Armed Services Vocational Aptitude Battery (ASVAB) against job performance and extending the effort to additional specialties.

Computerized Adaptive Testing Project: Objectives and Requirements. TN 82-22. July 1982. J. R. McBride. (AD-A118 447)

As lead laboratory in a joint-service project, NAVPERSRANDCEN is contracting for design, development, testing, and evaluation of a system for automated adaptive administration of military personnel selection tests. This report describes the

PERSONNEL ADMINISTRATION (Continued)

planned contracting approach and system requirements for developing a computerized adaptive testing system (CAT).

Assignment of General Detail Personnel in the Navy: Fleet Follow-up of Personnel Appraised in a Technical Classification Assessment Center Pilot Study. TN 82-23. July 1982. C. H. Cory.

Nine experimental tests administered in a Technical Classification Assessment Center (TCAC) setting to 139 general detail (GENDET) personnel were validated against fleet performance and career history criteria. Variables available from the operational records--classification test scores and biographical measures--were also included as predictors. Major criteria included supervisor's marks and binary variables indicating striker/nonstriker and retention/nonretention. Results showed that TCAC variables added from .12 to .31 to the validity coefficients of the maximally predictive batteries of operational variables and were primarily predictive for supervisor's ratings rather than for identifying the GENDETs most likely to become strikers or to remain in the Navy. The most predictive TCAC variables measured work accuracy under time-sharing conditions, speed and accuracy in finger-hand dexterity, classification accuracy in an hands-on situation, and personality and attitudinal characteristics.

ORGANIZATION MANAGEMENT

TECHNICAL REPORTS

Selective Retention: A Longitudinal Analysis. IV. Attrition Six Months After Recruit Training. TR 82-9. S. B. Landau. October 1981. (AD-A107 937)

This report is one of a series that describes a longitudinal study of a cohort of first-term enlisted personnel to determine how various variables are related to attrition. The purpose of the effort described herein was to determine how various behavioral intentions, attitudes, demographic characteristics, expectations, and performance indices are related to attrition occurring 6 to 7 months after recruit training. Enlisted master record information indicated that attrition between the end of recruit training and 6 to 7 months later was 5.3 percent. The variables most highly associated with attrition were lack of promotions, unauthorized absences, and the perceived honesty of the recruiter.

Selective Retention: A Longitudinal Analysis. V. A Comparison of the Attitudes, Perceptions, and Experiences of Class "A" School and Apprentice Training Personnel. TR 82-11. S. B. Landau, K. I. McCabe, and P. L. Wagner. October 1981. (AD-A107 896)

The purpose of the present effort, one in a series of longitudinal investigations, was to compare the training attitudes, perceptions, and experiences of Class "A" school (AS) and apprentice training (AT) personnel. Approximately 8 months after the completion of recruit training, a sample of 1892 enlisted personnel responded to a questionnaire designed to measure these factors. Results indicated that the general attitudes, training experiences, duty station experiences, commitment, and satisfaction of AS personnel were more positive than those of AT personnel. The two groups differed concerning the perceived usefulness and applicability of their training. The most important predictors of the behavioral intentions "to complete enlistment" and "to reenlist" were attitudinal items, such as little regret with the enlistment decision, perceptions of advancement opportunities, and organizational commitment. It was concluded that work environment and job content are important factors in attrition and retention behavioral intentions.

A Longitudinal Analysis of Navy Family Separation. TR 82-15. November 1981. D. S. Nice. (AD-A108 381)

The attitudes, psychological adjustment, and health of Navy wives whose husbands were deployed were compared with those of Navy wives whose husbands were at home. Similarly, attitudes, stress, and reenlistment intentions were assessed in the deployed and nondeployed groups of husbands. Pre-, mid-, and postseparation interviews with the wives revealed that separated wives exhibit higher levels of depressive affect and visit the doctor more frequently than do nonseparated wives. The majority of the psychological variables, however, revealed no differences between the groups. The wife's attitude toward reenlistment, the husband's attitude toward the Navy, and the husband's perception of family stress were the best predictors of his reenlistment intention. Data further indicated that the morale of the men in both groups declined over the 7-month period of the study.

ORGANIZATION MANAGEMENT (Continued)

Energy Conservation in Navy Family Housing: A "Master-metered" Approach. TR 82-18. B. Feher, D. F. Little, and E. P. Somer. November 1981. (AD-A109 022)

The purpose of the study was to develop, implement, and evaluate an intensive behavioral approach for inducing energy conservation in master-metered Navy family housing. A 200-unit housing complex was divided into equal-sized groups and treatment was randomly assigned to one group. Participants received energy-related materials and feedback regarding group energy consumption. An energy coordinator made household visits to participating residences. The participating group significantly reduced their electricity consumption to a level 4 percent below that of the control group. Energy-related attitudes, as measured by a questionnaire, were not found to be significant predictors of consumption. Consumption feedback and personal contact are seen as important supplements to traditional educational approaches to inducing behavioral change.

Energy-related Attitudes of Navy Family Housing Residents. TR 82-20. December 1981. D. F. Little, K. I. McCabe, S. H. Mills, B. Feher, and E. P. Somer. (AD-A109 655)

Residents of five family housing installations located throughout the United States were surveyed to assess the energy-related attitudes, opinions, and practices of Navy family housing residents. Emphasis was directed toward the evaluation of energy-related attitudes, housing problems, variables affecting conservation, and energy consumption practices. Residents' attitudes were generally of a proconservation nature, although substantial discrepancies were evident. Residents saw conservation information as most promotive of conservation; and the lack of information about energy costs and consumption and the structural soundness of the housing, as the greatest hindrances.

Energy Management for Navy Family Housing: A Manual for Voluntary Residential Energy Conservation. TR 82-22. January 1982. D. F. Little, B. Feher, and E. P. Somer. (AD-A110 958)

Because of declining energy supplies and skyrocketing energy costs, it is essential that the Navy emphasize conservation in all sectors of its activities. This report presents a manual designed to provide housing administrators with a relatively efficient, step-by-step approach to designing and conducting a local energy conservation program over an extended time period.

How Enlisted Women and Men View the Navy Organization. TR 82-23. January 1982. K. P. Durning. (AD-A110 116)

Responses of over 40,000 Navy enlisted women and men to the human resource management (HRM) survey were analyzed. Results replicated those of a 1975 study, disclosing that, although women were initially optimistic, their perceptions of the Navy were more negative than were men's as they advanced to petty officer levels. Mid-level women were less positive than were men on peer relations and in views of command human-resources emphasis and person/organization goal integration. Women chief petty officers, however, were as positive as male counterparts on these measures. On perceptions of supervisory adequacy, women were as positive as men at lower levels, but less positive at higher levels. This was also true of responses to items assessing motivation, the influence exerted by lower-levels on decision making, and equal-opportunity practices within the command.

ORGANIZATION MANAGEMENT (Continued)

Correctional Retraining in the Navy: An Evaluation. TR 82-35. February 1982. L. M. Doherty and S. F. Bacon. (AD-A112 716)

This project was conducted to evaluate the effectiveness of two pilot correctional custody units (CCUs) at Pearl Harbor, Hawaii and Coronado, California, and the behavioral skill training unit (BEST) at Norfolk, Virginia. These programs were intended to retrain errant, but potentially productive, first-term enlistees. The programs were evaluated on follow-up measures of attrition, performance and disciplinary actions, as well as on interview data collected. Results indicated that individuals improved in their performance following retraining but that the improvement decreased at 6 months. The frequency of disciplinary actions prior to and following retraining showed a significant decrease, indicating these retraining units are effective in countering disciplinary problems. Attrition data for 1-year follow-up of these units showed that all units had a lower attrition than did a comparable control group, with CCU Coronado and BEST having substantially lower rates. Policy recommendations were developed for the CCUs/BEST units themselves, operational user commands, Navy corrections programs, and further research and development.

Public and Private Sector Managers: Are They Really That Different? TR 82-41. April 1982. A. W. Lau, C. M. Pavett, and A. R. Newman. (AD-A114 021)

Since passage of the 1978 Civil Service Reform Act, which mandated new systems for executive selection, development, and performance appraisal, the importance of describing managerial and executive jobs in the public sector has increased. This recent attention to the public sector also emphasizes the relevance of comparing managerial jobs in the public and private sectors. This study compared high-level public sector Navy civilian executives (GS-16, 17, 18, or equivalent public law positions) and private sector managers and executives in terms of job content, job characteristics, and perceptions of the skills required for effective job performance. Results indicate that managers in both sectors (1) were very similar in rating job content, (2) indicate that they do not have time for reflective, systematic planning, and (3) agree on their assessment of the required characteristics necessary for effective job performance.

Navy Women in Traditional and Nontraditional Jobs: A Comparison of Satisfaction, Attrition, and Reenlistment. TR 82-50. July 1982. P. J. Thomas, M. J. Monda, S. H. Mills, and J. A. Mathis. (AD-A118 392)

Cohorts of about 1,000 men and 1,000 women who joined the Navy in 1975 were followed throughout their first enlistment. In this final report, the effects of gender, traditionality of job, and gender composition of workgroup upon attrition, satisfaction, advancement, migration, and reenlistment of women were investigated. Whenever possible, comparisons were made to men's rates. Results showed that gender composition of workgroup was not related to the dependent measures. Also, being assigned to a job traditional for one's gender was not related to women's satisfaction and work behavior but it was significantly related to men's attrition, advancement, and reenlistment.

ORGANIZATION MANAGEMENT (Continued)

Men and Women in Ships: Preconceptions of the Crews. TR 82-57. August 1982. C. S. Greebler, P. J. Thomas, and J. D. Kuczynski. (AD-A119 787)

Preintegration attitudes and expectations of 1936 men and 346 women assigned to six Navy ships were measured before the women reported aboard. Results showed that the majority of men believed integration would improve crew morale, but would impact negatively on discipline and increase interpersonal conflict. Lower ranking men favored integration, although they held the most traditional attitudes toward the roles of women and expected women would receive preferential treatment in job assignments, physically demanding work, and disciplinary action. Men working in departments where women are rarely found held traditional attitudes toward women's roles and were pessimistic about integration. The women were most concerned with profanity, proving themselves, and resentment from men.

Surface Warfare Junior Officer Retention: Early Career Development Factors. TR 82-59. August 1982. T. M. Cook and R. F. Morrison. (AD-A118 717)

This investigation, the third in a series based on data collected from a sample of junior surface warfare officers (SWOs) during 1978-79, addressed factors that affect their early career/professional development and the relationships between developmental progress, officer performance, and career intent. Results indicated that timely completion of career-essential qualifications was not related to background factors such as commissioning source, academic class rank, or military class rank, but it was related to attendance at the Surface Warfare Officer School (SWOS)-Basic, shipboard assignment variation, and individual perceptions of the work environment during the initial sea tour. Also, professional development progress was positively related to career intent and officer performance, as indicated by fitness reports.

SPECIAL REPORTS

Integration of Sexes at Sea: Attitudes and Expectations of Men and Women on Two Ships. SR 82-1. C. S. Greebler. October 1981.

The overall purpose of this study is to measure the attitudes and expectations of the women and men who will be involved in the integration of women into ship crews. The purpose of the effort described herein was to identify problem areas and subgroup characteristics and attitudes most likely to hinder successful integration.

Sex Integration Aboard Ship--An Antecedent Perspective. SR 82-2. C. S. Greebler. October 1981.

This study was conducted to assist the integration of women into the crews of noncombatant ships by identifying anticipated or potential problem areas arising from attitudes, expectations, and fears.

Assessment of Civilian Personnel Management and Equal Employment Opportunity Issues. SR 82-3. T. J. Koslowski. October 1981.

This study identified current and long-term research needs associated with Navy civilian personnel management and equal employment opportunity (EEO). This information will be used to develop a Navy civilian personnel management research

ORGANIZATION MANAGEMENT (Continued)

plan that will describe specific research studies and projects to address the needs identified.

Computer-based Shipboard Personnel Readiness and Training Management System: Subsystem Specifications. SR 82-5. J. A. Dollard. October 1981.

This report documents a computer-based shipboard personnel readiness and training management subsystem specification. The specification was used to develop such a subsystem as part of a shipboard integrated maintenance management system (SIMMS) aboard USS GRIDLEY (CG 21) in FY81.

Attrition and Promotion of Scientific and Engineering Personnel in Navy Laboratories Under High-grade Restrictions. SR 82-36. August 1982. T. T. Liang. (AD-A118 941)

During Fiscal Years 1974-1981, Navy research and development (R&D) centers were restricted as to the number of high-grade (GS-13 through 15) employees they were allowed to have. To determine the impact of this restriction, the relationship between attrition and promotion was assessed using historical data. Results, which showed that high-grade limitation is closely related to increases in professional attrition, can be used to make projections of professional attrition and form the basis for expanded analyses of civilian manpower management in the Navy.

A Technology Transfer Plan for Civilian Performance Contingent Reward Systems in the Naval Material Command. SR 82-38. August 1982. J. R. Turney and S. L. Cohen.

This project presents a detailed plan for adopting and implementing newly developed productivity improvement techniques employing monetary incentives within the Navy. Steps for developing a technology transfer support system and extending the technology transfer process to user commands are described and responsibilities and roles for researchers, headquarters representatives, and user commands are delineated.

TECHNICAL NOTES

Navy Human Resource Management Survey: Analysis of Core and Proposed New Content Areas. TN 82-21. June 1982. D. G. Bowers.

The structure of the present HRM Survey and 10 new items were examined using data from 3959 persons in 17 units surveyed between December 1979 and April 1980. Results showed that, in general, the survey's structure, content, and items are statistically sound. Two indexes involving (1) intergroup coordination and (2) job challenge should be considered at the next HRM Survey revision conference in 1987.

Assessing Alternative Military Family Housing Assignment Policies. TN 82-24. August 1982. R. Hutchins and M. Rowe. (AD-A118 742)

The Government Accounting Office (GAO), in a 1979 report, recommended that priority for assignment to military family housing be given to personnel who can least afford to live off base (E-1--E-3). The purpose of this effort was to evaluate modifications to the current DoD family housing assignment policy that address GAO's criticism. Central to the evaluation is a computer program, the Housing Assignment Policy (HAP) model, that assesses the impact of a change in assignment

ORGANIZATION MANAGEMENT (Continued)

policy by simulating the effects of a specific set of priorities or rules. The number, type (pay grade), and location of personnel affected, as well as the associated changes in budgetary costs (specifically, basic allowance for quarters (BAQ)) were derived for numerous scenarios and compared. Although changes in housing policy would affect morale and retention, such effects are difficult to measure and were not included in this work.

Ship-initiated Microcomputer Applications: Detailed Description. TN 82-28. September 1982. J. A. Dollard and R. Backman.

A microcomputer system with data management system (DMS) and word processing system (WPS) capabilities was placed in two Navy combatant ships. Over 80 DMS and 200 WPS applications were designed and developed by the ships without professional assistance. A detailed description of these applications was prepared. Application specifications, data definitions, report formats, and sample outputs are provided.

EDUCATION AND TRAINING

TECHNICAL REPORTS

Mathematics Skill Levels in Navy Class "A" Electronics Schools. TR 82-2. R. M. Berger, D. Marr, R. H. Cremer, and F. R. Berger. October 1981. (AD-A108 037)

Based on results of a survey that identified the mathematics skills needed to perform successfully in Navy electronics "A" schools, mathematics tests were developed to assess the mathematics skills of entering and graduating electronics "A" school students. The tests were administered to about 1000 entering and 1200 graduating students at "A" schools for nine electronics ratings. Analysis of test scores obtained revealed significant differences between entering and graduating students on these mathematics topics taught as part of the electronics course training. However, no significant differences were found between the two groups on topics that were prerequisites to the training.

Mathematics Course Requirements and Performance Levels in the Navy's Basic Electricity and Electronics Schools. TR 82-3. M. S. Baker. October 1981. (AD-A106 694)

Instructors in the Navy's Basic Electricity and Electronics (BE/E) schools were presented with a list of 70 mathematical skills and asked to indicate (1) how important they were to successful BE/E school performance and (2) whether they were prerequisite, reviewed, or taught in the schools. Also, they were asked to state the number and type of performance aids used in the course and during the exam. Responses showed that, of the 70 skills surveyed, 21 were rated as affecting performance. Based on survey results, a mathematics test was developed to assess BE/E student performance on skills rated as affecting performance, and administered to groups of students entering and graduating from BE/E school. Results showed that student performance was marginal in most topic areas considered critical to course performance by instructors. This suggests that either the instructors overrated the importance of these skills or the criteria for successful BE/E completion are too low.

Mathematics Curricula Requirements and Performance Levels in Navy Class "C" Electronics Schools. TR 82-4. M. S. Baker. October 1981. (AD-A106 995)

Instructors of 41 Navy electronics "C" courses were presented with a list of 70 mathematics skills and asked to indicate (1) how important they were to successful course performance and (2) whether required skills were prerequisite to, reviewed in, or taught in the course. Based on results obtained, a mathematical skills test was developed for the "C" course for the aviation electrician's mate and avionics technician (AE/AV) ratings, and administered to entering and graduating students. Significant differences were found between the two groups on total test and in seven topic areas, most of which were taught during the course. Since student performance in both groups was only marginal in most topic areas considered critical for successful course performance, it is possible that either the importance of these skills is overrated or criteria for successful course completion are too low.

Mathematics Requirements of Electronics Ratings in the Job Environment. TR 82-5. M. S. Baker. October 1981. (AD-A106 674)

Fleet personnel in 10 electronics ratings were asked to indicate (1) how often they used skills in 20 mathematics topic areas in performing their jobs, (2) the type of work engaged in when employing mathematics skills, (3) whether mathematics skills

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ability was helpful to job performance, and (4) whether they required mathematics skills not taught in school in doing their job. Results showed that, except for skills related to basic arithmetic, units, and conversions, the majority of respondents in all ratings surveyed did not use the skills listed during job performance. Across all ratings, 27 percent indicated a need for additional mathematics skills; and 67 percent, that mathematical knowledge was helpful during job performance.

Tailoring Shipboard Training to Fleet Performance Needs: III. Development of Deckplate Procedural Training for the Shipboard Propulsion Plant Operator Training (SPPOT) Program. TR 82-6. R. E. Main, M. L. Abrams, C. R. Chiles, J. L. Todd, and B. Cunanan. October 1981. (AD-A107 936)

In designing a shipboard training program for propulsion watchstanders, it was necessary to specify shipboard training strategies, identify skills and knowledges required by propulsion watchstanders, develop a description of the propulsion system aboard USS CONSTELLATION (where the project was being conducted), and develop algorithmic flow charts of watchstander procedures. The training program developed, called the Shipboard Propulsion Plant Operator Training (SPPOT) program, included training modules and procedural, locational, and administrative training aids. Two types of procedural training aids were developed and evaluated aboard CONSTELLATION. Results showed that shipboard personnel considered the aids helpful in training. It appears that products developed under this project can be generalized to other parts of the fleet.

Evaluation of Electronic Counter-countermeasures Training Using Microcomputer-based Technology: Phase I. Basic Jamming Recognition. TR 82-10. S. G. Gardner and B. D. Ellis. October 1981. (AD-B061 109)

Seven microcomputer-based training systems were installed to provide ECCM simulation training, drill and practice, and performance testing for three courses at a fleet combat training center. A total of 357 trainees participated. Analysis of pretest-posttest mean difference scores indicated that, within each group, there were substantial and significant gains in performance. Student questionnaire responses revealed quite favorable attitudes toward the ECCM training.

The Evaluation of a Job-oriented Basic Skills Training Program--Interim Report. TR 82-14. M. S. Baker and K. H. Huff. November 1981. (AD-A107 895)

This report describes the interim evaluation of four training courses for Navy personnel whose ASVAB scores were below the minimum required for entry into Navy Class "A" technical schools. The training courses were designed to increase their mastery of the skills and knowledge deemed to be prerequisites for success in selected Class "A" schools. Data indicate that the job-oriented basic skills (JOBS) program has the potential for attenuating Navy technical manpower shortages and contributing to minority upward mobility.

Computer-managed Instruction in the Navy: V. The Effects of Charted Feedback on Rate of Progress through a CMI Course. TR 82-16. N. H. Van Matre, H. S. Pennypacker, W. H. Hartman, B. E. Brett, and L. Q. Ward. November 1981. (AD-A109 020)

Computer-generated progress charts were developed to provide feedback to students under computer-managed instruction. The effect of cumulative progress

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information on course completion time and achievement was determined through two experiments. In Experiment I, involving civilian researchers, BE/E students experienced five different conditions of charted feedback. A standard BE/E learning center served as control. Although no significant differences in completion times were found, student and instructor attitudes were strongly supportive of the chart procedures. Experiment II operationally applied the best procedure from Experiment I, chart-on-demand, at four CMI schools. Versions of charts for instructor use were also employed. In all four schools, students using the chart procedures completed the course in shorter time than did control students. Student and instructor attitudes toward the charts were again extremely supportive. The faster training time by students indicates the potential for significant training cost savings by widespread use of the feedback charts in Navy CMI courses.

Computer-managed Instruction in Navy Technical Training: An Attitudinal Survey.
TR 82-19. December 1981. C. A. Robinson, E. A. Tomblin, and A. Houston. (AD-A109 664)

This study attempted to determine attitudes of students and instructors toward computer-managed instruction and to identify factors related to these attitudes. It was found that students were favorable toward CMI while instructors were generally not favorable. Also, the trainees' experiences with the Navy are related to attitudes toward the CMI system. The longer the trainee is in the service, the more negative he tends to be toward the system.

Relationships Between Communication Variables and Scores in Team Training Exercises.
TR 82-25. January 1982. G. F. Lahey and D. A. Slough. (AD-A110 117)

As investigation was made of the practicality of assessing anti-submarine warfare (ASW) team performance by means of measures of the volume of communications. A system for classifying communications was developed based on an analysis of published data on communication rates (e.g., number of evaluative messages sent per minute) of ASW helicopter crews. Next, communications were recorded for ship's teams during two exercises in the 14A2 ASW team trainer. Communication rates were computed for various types of messages over the ship-to-ship and ship-to-air circuits. Rates were compared against instructor grades for individuals, subteams, and teams. Communication rates on the intership circuit tended to be negatively correlated with grades, primarily because instructors gave lower grades to teams doing excessive talking. Rates on the ship to air circuit were positively correlated with performance on the later exercise where two aircraft were used rather than one and where a much greater volume of information needed to be transmitted. On the internal circuits, few significant relationships were found between communication rates and performance. Implications of the findings for development of an objective performance measurement system for team training are discussed.

A Survey of Correspondence Course Training. TR 82-27. January 1982. E. H. Rocklyn.
(AD-A111 044)

A survey of 17 correspondence course training (CCT) systems, primarily in the military and government sectors, resulted in (1) a summary description of system aspects, (2) the identification of course noncompletion or student attrition as the most critical problem, (3) a list of factors that tend to affect course completion

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rates, and (4) identification of some trends in system operations. A survey of the CCT literature also indicated that course noncompletion is the most critical problem.

Project STEAMER: VI. Advanced Computer-aided Instruction in Propulsion Engineering--An Interim Report. TR 82-28. January 1982. A. Stevens, B. Roberts, L. Stead, K. Forbus, C. Steinberg, and B. Smith. (AD-A110 797)

At present, propulsion engineering training is a major problem for the Navy. NAVPERSRANDCEN's goal is to build an intelligent computer-aided instruction (ICAI) training system to enhance Navy training in this area and evaluate the potential of new computer-based technology to provide a qualitatively different form of training. The STEAMER project is concerned with the design and implementation of a training system to instruct personnel in the principles of propulsion engineering. Operational personnel need to understand these principles of plant operation in order to remember the multitude of procedures required for safe plant operation and to be able to respond to a myriad of potential casualty conditions. This report describes the current STEAMER prototype.

Fundamental Skills Training in the Saudi Naval Expansion Program: Evaluation Report I. TR 82-31. February 1982. T. M. Duffy and D. Fugate. (AD-A111 445)

This report describes the development and evaluation of a fundamental skills training (FST) program for enlisted personnel in the Royal Saudi Naval Forces (RSNF). The FST program is a multi-stranded, objective-based, mastery program that teaches the reading, writing, mathematics, science, and study skills prerequisite to "A" school training in the electronics, engineering, seamanship, and clerical strands. Its goal is to increase the comparability of RSNF and U.S. Navy students in the follow-on "A" school training, where the two groups are integrated.

Development, Test, and Evaluation of the Computer-assisted Study Management System in a Navy "C" School: Summary Report. TR 82-33. February 1982. D. L. Van Kekerix, W. H. Wulfeck, II, and W. E. Montague. (AD-B062 846)

A group-paced, lecture-delivered, advanced-level maintenance course was converted to self study. Written assignments on study of a system technical manual were substituted for the lecture portions of the course, and frequent tests were used. The revised course was conducted under both instructor management and computer management using a microcomputer version of the computer-assisted instruction study management system (CAISMS). Test scores, measures of time utilization, and frequencies of student behavior indicative of active participation in the learning process were collected. The instructor- and computer-managed versions of the course led to improved student performance, increased student time in interacting with instructional material, 15 to 27 percent reduction in student time required to complete the course, and greater amounts of student "hands-on" time with the equipment. It was concluded that Navy instructors can successfully convert existing group-paced courses to self study, and that such conversions are likely to result in substantial time savings. Computer management was marginally cost effective for the small course examined in this effort. Consideration of widespread adoption of self-study methods and computer management was recommended.

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Navigation Training Methods for Low-altitude Flight. TR 82-43. May 1982. J. Qualy, D. W. Jahns, J. D. Gilmour, and D. Paulson. (AD-A115 179)

A prototype training course to apply map interpretation and terrain analysis (MITAC-II) to low-altitude fixed-wing navigation was developed to improve visual orientation skills of Marine Corps aircrews. The course consisted of a slide-tape illustrated lecture and a series of dynamic simulation exercises using 70-mm cinematic techniques. Fifteen advanced aircrew training instructors participated in the demonstration and evaluation of the course and served as subject matter experts. MITAC-II was pronounced effective in improving low-altitude orientation with specific improvements recommended for the production model.

The Role of Word Difficulty and Sentence Length in Text Comprehension. TR 82-44. May 1982. T. M. Duffy and P. K. U'Ren. (AD-A114 935)

The relationship of readability, readable writing techniques, and comprehension was evaluated in a series of five experiments. Passages from a standard reading test were rewritten by following specific basic readable writing rules for simplifying words and sentences. Following the procedures resulted in major improvements in readability (six grade levels). However, except for one instance, this manipulation had no practical effect on comprehension across a series of five experiments in which the skill of the readers, the time allowed for reading, and the type of comprehension test were varied. Comprehension was facilitated only when the vocabulary alone was simplified and then only for low ability readers taking a reading-to-learn type of test. The results indicate that readable writing rules and readability formulas are ineffective for regulating or monitoring the comprehension difficulty of text.

Instructor's Role in Individualized Training: A Survey of Two Computer-managed Courses. TR 82-45. May 1982. K. A. Johnson and L. L. Graham. (AD-A114 917)

Detailed records were made of instructor behavior in two Navy courses taught by means of individualized instruction. There were five specialized jobs in one course and six in the other. The jobs within each course differed considerably from one another in (1) the kinds and patterns of activities and (2) the total demands on the instructor. Most of the specialized jobs found in one course had nominal parallels in the other course, but the activities observed in these parallel jobs were frequently quite different. Most instructors spent the major part of their time in brief, relatively routine interactions; complex tutorial interactions were rare.

Instructional Quality Inventory: Usability of Procedures. TR 82-46. June 1982. H. W. Stern and P. S. Fredericks. (AD-A117 681)

The purpose of this effort was to evaluate the instructional quality inventory (IQI), which was developed to supplement the instructional systems development procedures used for training development by all three military services. A two-person team with limited experience in the IQI process used IQI to analyze an instructional module from the Radioman (RM) "A" School and revised the module to correct deficiencies found. To determine the effectiveness of the revised module, two groups of students were selected. The first group (standard) received the original materials; and the second group, the IQI-revised materials. Results showed that the IQI provided a useful framework for identifying deficiencies in current instruction

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and that students using IQI-revised materials scored higher on job-relevant tests than did those using standard materials.

Map Interpretation for Low-altitude Flight: Evaluation of a Prototype Course. TR 82-47. June 1982. D. Paulson. (AD-A118 391)

A two-part map interpretation and terrain analysis course (MITAC-II) was developed to improve the low-altitude visual orientation skills of fixed-wing pilots. Part 1, a lecture, explains and illustrates how real-world features are selected for map portrayal and how their visual significance is affected by low-altitude operations. Part 2 is composed of nine dynamic exercises designed to give practice, drill, and self-evaluation in the map interpretation principles presented in the lecture. An experimental evaluation of the course indicated that it provided a significant improvement in the location of tactical targets, but not in the identification of terrain targets. The latter finding may have been due to artifacts in the testing situation. Participants stated that low-altitude orientation skills were improved as a result of the course. It was recommended that the full MITAC-II course be implemented early in flight training.

Instructional Systems Development for P-3 Aircrew Training. TR 82-51. July 1982. K. T. Long, C. Freedman, and R. A. Walker. (AD-A118 500)

A new instructional system was developed for the 14 aircrew training tracks of the P-3 fleet readiness squadron (FRS) training system. An instructional systems development (ISD) model was used to describe training requirements, develop instructional materials, and satisfy implementation and management requirements. This program arose because of the requirement that P-3 aircrew training be conducted in the face of restrictions in training resources and the need to standardize training being provided by the two P-3 FRSs. Recommendations are provided concerning the development and implementation of large-scale training programs using ISD methodology.

An Evaluation of Individualized, Job-specific Maintenance Training. TR 82-53. July 1982. K. A. Johnson, L. L. Graham, and S. B. Carson. (AD-A118 393)

Individualized, job-specific courses were developed for three organizational-level billets in an A-7E squadron: The TF41 power plant maintenance technician, the structures/hydraulics maintenance technician, and the plane captain. Training was oriented specifically toward the tasks that the graduate would perform in the billet during his first enlistment. Training on the more general or theoretical knowledge needed for a given task was closely integrated with training on the more specific or concrete aspects of the task, instead of being segregated into common-core courses at the beginning of the training pipelines. The courses were supported by the Navy's computer-managed instruction (CMI) system.

Students trained in the job-specific courses tended to do better than their conventionally trained counterparts on a series of written and performance tests. They were rated about the same by their supervisors on the job. Training times for the power plant and structures/hydraulics maintenance technicians were reduced by about half. For the plane captains, the reduction was only about 10 percent (there is no common-core training for this billet). The use of CMI alleviated many of the

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difficulties that have been encountered in providing job-specific training by conventional means.

Reading Skills, Reading Requirements, Learning Strategies, and Performance in Navy Technical Schools. TR 82-55. August 1982. S.I. Sander and T.M. Duffy. (AD-A120 851)

This study examined the relationship between the reading grade levels (RGLs) of 5797 students and their performance in 46 Navy technical training schools. Over all schools, the relationship between RGL and performance was small. The variability among schools, however, showed wide ranges. The impact of learning strategies, educational level, and fleet experience on performance was also studied.

Tailoring Shipboard Training to Fleet Performance Needs: IV: Training Modules and Administrative Aids for the Shipboard Propulsion Plant Operator Training (SPPOT) Program. TR 82-61. August 1982. R.E. Main, M.L. Abrams, C.R. Chiles, and J.L. Todd. (AD-A119 459)

Prototypes of performance-oriented instructional modules and administrative aids were developed for use in training main propulsion watchstanders in shipboard environments. These materials, along with previously developed procedural training aids, constitute the Shipboard Propulsion Plant Operator Training (SPPOT) program. The modules provide relevant background on propulsion fundamentals and the functional characteristics of propulsion systems. Materials are ship-specific and designed for use in work environments. The administrative aids related SPPOT materials to the Navy's Personnel Qualification Standards (PQS) system.

SPECIAL REPORTS

Preliminary Objectives for Single-ship Antisubmarine Warfare Team Training Exercises. SR 82-4. H. W. Stern and D. A. Slough. October 1981. (AD-B061 260)

Team training and evaluation objectives were prepared as part of a project to develop team assessment instruments. The objectives covered three types of single ship ASW exercises: (1) passive sonobuoy localization, (2) passive target motion analysis, and (3) search-attack unit exercises using active sonar.

An Analysis of the Potential Use of the Sonar Performance Testing System (SPTS) for Training Critical Operator Skills. SR 82-8. December 1981. R. R. Mackie, T. E. Shultz, and R. M. Bearden. (AD-B061 985)

The objectives of this effort were (1) to determine whether the prototype sonar performance testing system (SPTS) could be used as the principal component of an improved system for training sonar detection and classification, and (2) to identify the modifications required to permit it to perform that function. The research approach involved interviews with fleet instructors to determine SPTS usefulness in a training mode and reviews of current and projected systems for operator skill training to identify their capabilities in training target detection and classification skills. Moreover, analyses were performed to identify software and hardware modifications to SPTS that would be needed to make it an effective training device in these areas. It was concluded that the SPTS, modified for the training mode, would more effectively train target detection and classification skills than would any existing or soon-to-be procured operator training system.

EDUCATION AND TRAINING (Continued)

Deployable Team Training for Acoustic Analysts and Tactical Coordinators: I. Task Listing. SR 82-10. December 1981. S. I. Windle, J. E. Brown, H. D. Kribs, and L. J. Mark.

The overall objective of the acoustic analyst and tactical coordinator (AW/TACCO) team training program is to develop a team training system for the AW/TACCO team that can be delivered to relevant air platforms in the deployed setting. The purpose of the effort described herein was to provide the task listing for AW/TACCO team training.

Deployable Team Training for Acoustic Analysts and Tactical Coordinators: II. Objectives Hierarchy. SR 82-11. December 1981. S. I. Windle, J. E. Brown, L. J. Mark, and H. D. Kribs.

The overall objective of the AW/TACCO team training program is to develop a team training system for the AW/TACCO team that can be delivered to relevant air platforms in the deployed setting. The purpose of the effort described herein was to provide the objectives hierarchy for AW/TACCO team training.

Deployable Team Training for Acoustic Analysts and Tactical Coordinators: III. Ordinal Syllabus. SR 82-12. December 1981. S. I. Windle, H. D. Kribs, and L. J. Mark.

The overall objective of the AW/TACCO team training program is to develop a team training system for the AW/TACCO team that can be delivered to relevant air platforms in the deployed setting. The purpose of the effort described herein was to provide an ordinal syllabus for AW/TACCO team training.

An Evaluation of Media Selection. SR 82-13. January 1982. H. D. Kribs and L. J. Mark.

The objectives of this study were to survey state-of-the-art media selection methodologies, to evaluate the techniques currently being applied to naval air training programs, and to present three of the techniques to the Naval Air Systems Command (NASC), who would select one for implementation and incorporation into a media costs handbook. Media selection methodologies were surveyed, and the following three were selected to represent the state-of-the-art: (1) the training effectiveness and cost effectiveness prediction (TECEP) technique, (2) a computerized technique using logic similar to TECEP, and (3) small-group process called the DELPHI method. The latter was included by direction from NASC because of specific interest in exploring its possibilities as a technique that is as efficient and as valid as the other techniques, and because of its perceived potential for minimizing subtle biases. After a review of the three methodologies, NASC selected DELPHI for test case evaluation.

Map Interpretation and Terrain Analysis Course (MITAC) for Infantrymen: Illustrated Lectures. SR 82-14. January 1982. K. D. Cross and S. M. Rugge.

A map interpretation and terrain analysis course (MITAC) consisting of illustrated lectures using colored slides and recorded commentary was developed to supplement Army and Marine Corps infantry training on map interpretation for land navigation and tactical operations. The six-part lecture course covered interpretation of terrain relief, inland hydrography, vegetation, and transportation lines as

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represented on Defense Management Agency maps (1:50,000 scale). The prototype course is currently being evaluated by Marine Corps subject matter experts.

Generalized Maintenance Trainer Simulator: User Manual. SR 82-17. March 1982. G. F. Lahey and V. M. Malec. (AD-A112 467)

This manual has been prepared to support preparation of lessonware (data bases) for the generalized maintenance trainer simulator (GMTS). The GMTS is capable of providing interactive simulation of function for a wide variety of equipments. The manual outlines the process of developing images of the equipment being simulated to depict equipment states (indicators, switch settings, test equipment readings, etc.) and an alphanumeric data base that controls access to each image. Experience with the trainer indicates a high degree of transfer to real equipment maintenance. The GMTS is the precursor to Unit 1 of the electronic equipment maintenance training system (EEMT, Device 11B106). This manual therefore provides a description of both the GMTS and the functional characteristics of the EEMT.

Potential Applications of Computer-assisted Instruction to P-3 Aircrew Training. SR 82-18. March 1982. L. J. Mark, W. W. Hawkins, and H. D. Kribs. (AD-A113 491)

An investigation was undertaken to examine the recently revised P-3 aircrew training syllabus at Patrol Squadron 31 to identify the potential contributions that could be made to training effectiveness by a shift to computer-assisted instruction (CAI). Five areas representing the range of potential applications were examined. The characteristics of existing and potential computer-based systems were reviewed, and recommendations for applications to P-3 aircrew training were made.

Improving the Quality of Navy Training: The Role of R&D in Support of Instructional Systems Design. SR 82-19. March 1982. W. E. Montague and W. H. Wulfeck, II. (AD-A113 457)

In this paper, background developments leading to the adoption of the instructional systems development (ISD) model are described briefly. During the 1960s, a systems analysis approach to training by a team of experts evolved into the ISD approach, which assumed that the methods used by experts could be described completely enough to allow nonexperts to carry out training development. Recent studies evaluating ISD implementation suggest that this goal has not been reached. While ISD as a general curriculum development procedure is adequate, it needs considerable detailed refinement.

Electronic Maintenance Training Equipment: A Comparative Analysis. SR 82-24. May 1982. Advanced Technology, Inc. (AD-B065 336L)

The design characteristics of 12 computer-based training devices that are potentially useful for teaching electronics maintenance techniques to Navy technicians were compared to determine if there are logical alternatives to the electronic equipment maintenance trainer (EEMT), which is currently being developed by NAVPERSRANDCEN. In comparing systems, efforts were made to determine if they could host the software and lessonware developed in support of EEMT. Results showed that none of the systems analyzed can support the EEMT software and lessonware without significant modifications.

EDUCATION AND TRAINING (Continued)

User's Guide for Microcomputer Applications of the Computer-aided Instruction Study Management System (CAISMS). SR 82-28. June 1982. D. L. Van Kekerix and W. H. Wulfeck, II. (AD-B066 199)

A group-paced, lecture-delivered, advanced-level maintenance course was converted to self-study. Written assignments directing study in the system technical manual were substituted for the lecture portions of the course, and frequent tests were used. The computer-assisted instruction study management system (CAISMS) was used to give the tests and manage the student records. This report presents the procedures for writing the files needed for computer testing, as well as instructions for using the student records maintained by the computer.

Procedures for Adapting Group-paced Instruction to Self-study Instruction. SR 82-30. July 1982. D. L. Van Kekerix, W. H. Wulfeck, II, and W. E. Montague.

The revision of instructional materials for advanced Navy schools ("C" and fleet) is usually performed by the instructional staff of each school. The primary control and guidance documents, NAVEDTRA 106A (Interservice Procedures for Instructional Systems Development) and NAVEDTRA 110A (Procedures for Instructional Systems Development) are written for the professional training developer and address the development of new course materials. The procedures in this document are supplemental to the above guidance documents and are intended for use by school personnel when it has been decided to convert existing group-paced instruction to self-study.

Establishing Relative Costs in a Complex Training System: A Cost Assessment Model and Its Application in the P-3 Fleet Readiness Squadron Aircrew Training System. SR 82-32. August 1982. W. F. Thode and R. A. Walker. (AD-A118 769)

Training system decisions are often made without a complete understanding of the impact on system costs. This report describes a model that can be used to estimate and compare the costs of training system components and of potential changes to the components. The model is intended for use by managers of complex training systems who are contemplating system changes. The cost assessment model is presented and applied to data available from the P-3 fleet readiness squadron (FRS) aircrew training system.

A Life-cycle Cost Model for an Electronic Maintenance Trainer. SR 82-33. August 1982. L. J. Mark, H. D. Kribs, J. W. Schuler, and J. E. Brown. (AD-A118 435)

This research was conducted in support of the Class "A" electronic equipment maintenance training (EEMT) system program. This report describes the development of the EEMT life-cycle cost model. Cost data for EEMT planning, programming, and budgeting are provided through cost estimation and work breakdown structures.

Computer-generated Indices of Student Performance. SR 82-34. August 1982. K. A. Johnson. (AD-A119 138)

Indices that can be generated by computers as aids in managing students were evaluated by applying them to historical data on student performance drawn from the Navy's Aviation Fundamentals Course. It was found that several of the indices now in use are less powerful or less desirable than are available alternatives. Some of these

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alternative indices could be adopted with little difficulty; others would require fairly substantial modifications of the existing system.

Microprocessor-based On-site Training for Passive Acoustic Analysts: I. Identification of a Common Syllabus. SR 82-35. August 1982. C. A. Robinson, W. H. Smith, and W. F. Thode. (AD-B067 452)

The purpose of this three-stage effort is to demonstrate the feasibility of micro-computer applications for on-site training of passive acoustic analysts using a suitably developed common-core curriculum. The purpose of Stage I, described herein, was to define a set of common training elements for air, surface, and subsurface platforms and organize these elements into a syllabus of instruction. Analyses of subject matter of each of the communities indicated commonality among the platforms. For the common subject matter, objectives were derived and a common syllabus was developed that would allow the training of analysis and classification skills.

The Status of Authoring Aids for Instructional Systems Development: An Analysis of Needs and Availability. SR 82-37. August 1982. S. K. Wetzel, J. A. Ellis, W. H. Wulfeck, II, and W. E. Montague.

Surveys were conducted at the Navy's Instructional Program Development Centers to determine the need for the development or modification of authoring aids to support designers/developers in producing high quality, usable instructional materials. In addition, tri-service availability and utilization of authoring aids were assessed. Results indicate that instructional strategy selection, terminal/enabler objective writing, and test construction need support. The tri-service assessment showed that existing aids and those under development would require major modifications to meet Navy requirements. It was recommended that (1) designers/developers be encouraged to take courses/workshops in instructional technology, (2) coordination be maintained with appropriate tri-service agencies for interservice exchange, and (3) existing authoring aids, such as the Instructional Quality Inventory and the Author Training Course, be modified if necessary and placed on-line as computer-based aids.

Deployable Team Training for Acoustic Analysts and Tactical Coordinators: IV. Management Plan. SR 82-39. September 1982. H. D. Kribs, L. J. Mark, and S. I. Windle.

This report, the fourth in a series of five to be published concerning the development of an air antisubmarine warfare (ASW) team training system for deployed settings, describes the media alternatives, training support requirements, and implementation/quality control considerations for AW/TACCO team training. Previous reports identified the team task listing, the objectives hierarchy, and the ordinal syllabus. A subsequent report will provide the lesson specifications for the team training system.

TECHNICAL NOTES

The Effect of Stresses and Challenges on "A" School Students' Performance and Commitment. TN 82-4. January 1982. J. P. Sheposh, B. J. Kunkel, and C. M. Sprague.

This research was conducted to (1) identify the factors operating in Navy training environments that are stressful and, recognizing the potential benefits of

EDUCATION AND TRAINING (Continued)

pressure, challenging for a sample of "A" school students, (2) determine the extent to which male and female students differed in the amount and nature of reported stress, and (3) construct a conceptual model to aid in understanding the effect of personal and environmental factors on a person's response to stress and the effects of stress on attitudinal and behavioral outcomes. Subjects consisted of 240 students, 181 men and 59 women, at three Navy "A" schools. Questionnaires designed to assess environmental factors, personal factors, sources of stress, and challenge and outcome variables were administered to subjects in small class groups.

Generalized Maintenance Trainer Simulator: System Description. TN 82-6. January 1982. G. F. Lahey.

This report provides a basic description of the generalized maintenance trainer simulator (GMTS) design concept and the simulator's role in training. The GMTS is an interactive, image-based, computer-controlled system designed to provide maintenance training for electronic systems. The trainer/simulator uses an image projector to present two-dimensional pictures of the simulated equipment. Students interact with the images to change equipment states by selecting desired switch settings and by symbolically connecting test equipment to test points to take test readings. The trainer keeps track of all student actions and uses information on switch settings to present appropriate images. It is used as a substitute for actual equipment in laboratory exercises.

Development and Validation of Instructional Materials for the Study Management System (SMS) in a Navy "C" School. TN 82-9. February 1982. D. L. Van Kekerix, W. H. Wulfeck, II, and W. E. Montague.

This development effort sought to adapt the AN/BQN-17 Combined Maintenance Course (A-130-0169), which is taught at the Fleet Anti-submarine Training Center, Pacific (FLEASWTRACENPAC), to a self-study format under SMS management in two phases: the first, involving an instructor-managed format; and the second, a computer-managed format. The development of procedures, usable by school personnel, for adapting existing group-paced instructional materials is a prerequisite of either format.

MANBOARD: A Graphic Display Program for Training Relative Motion Concepts. TN 82-10. March 1982. E. Hutchins and T. P. McCandless.

A microcomputer-based interactive graphics program has been created to provide conceptual instruction in maneuvering board problem solving. The program presents a simulation display of relationships between relative motion and geographic plots of ship movements. The display system helps students understand the actual movements of ships in large-scale space. The nature of the graphics display is based on an analysis of the conceptual difficulties experienced by failing students. The system is now being used on a pilot basis at the Fleet Combat Training Center, Pacific in San Diego.

Is Simulation Fidelity the Question? TN 82-13. April 1982. W. E. Montague.

Recent work on the analysis of learners' representations of complex physical systems was reviewed. Results were used to introduce the concept of mental models, which are an important part of what must be considered in designing simulation.

EDUCATION AND TRAINING (Continued)

However, faulty mental models of what simulators should be like ignore almost everything known about how to teach people complicated tasks. It was suggested that design specifications for training simulators include features intended to promote learning and understanding.

Computer-based Education and Training Functions: A Summary. TN 82-17. May 1982. R. DeV. Peters. (AD-A115 734)

This report provides brief descriptions of the functions a computer can perform in educational and training settings and a taxonomy of these functions to facilitate an understanding of their interrelationships in a computer-based instructional system. It is intended for those involved with operational educational and training facilities in both armed services and civilian organizations.

The Structural Strategies Model. TN 82-18. May 1982. J. P. Smith and C. M. Reigeluth.

It is generally accepted that the subject matter of many fields has inherent organization or structure that, if reliably identified, would permit the development of more efficient instructional procedures. This research proposes an approach for identifying/developing major types of structures (taxonomies, hierarchies, theories, or models) and for organizing and sequencing subject matter within and across structures.

Project STEAMER: VII. A Computer-based system for monitoring the boiler light-off procedure for a 1078-class Frigate. TN 82-25. August 1982. E. Hutchins, T. Roe, and J. Hollan.

A computer-based tutorial system that monitors and critiques students' execution of a steam propulsion plant procedure was implemented in the LISP programming language. The system responds to student commands, acknowledging those actions that are appropriate and providing explanation when a student orders actions that are not appropriate.

HUMAN PERFORMANCE

TECHNICAL REPORTS

Comparison of State Tables and Ordnance Publications for Troubleshooting Digital Equipment. TR 82-7. R. J. Smillie and M. M. Porta. October 1981. (AD-A107 945)

Eight Navy technicians participated in an evaluation of the effectiveness of state tables in troubleshooting the missile control unit (MCU) of the NATO Seasparrow Surface Missile System. In a repeated-measures design, the technicians used either state tables or ordnance publications (OPs) to troubleshoot 96 problems in the MCU. With state tables, 31 of 48 problems were solved in 1499 minutes. With OPs, 9 of 48 problems were solved in 2027 minutes. Twice as many checks were made with OPs as were made with state tables. Seven of the eight subjects rated state tables as excellent or good. With OPs, the ratings were lower and less consistent, ranging from poor to good. In general, state tables were preferred over OPs. Results are discussed in terms of state table implementation in the fleet.

Event-related Brain Potentials and Cognitive Processing: Implications for Navy Training. TR 82-8. G. W. Lewis, P-A. Federico, J. N. Froning, and M. Calder. October 1981. (AD-A109 019)

This report describes the evaluation of a relatively new technology, the analysis of brain event-related potentials (ERPs), as a possible means of improving Navy training. The subjects, 50 Navy recruits undergoing basic military training, were clustered into two groups, or types, based on paper-and-pencil tests--a "spatial processing" group and a "verbal processing" group. Visual, auditory, and bimodal ERP data were recorded for each subject from scalp contact electrodes. Greater amplitude asymmetry areas were found with visual stimuli for the "spatial" group and with auditory stimuli for the "verbal" group. Greater sensory interaction was found in the right hemisphere for the "spatial" group and in the left hemisphere for the "verbal" group. Research will be conducted to determine whether training can be enhanced by emphasizing visual media when training "spacial processing" students and auditory media when training "verbal processing" students.

Effects of Track Load on Decision Performance in Simulated Command and Control Operations. TR 82-21. January 1982. R. T. Kelly and F. L. Greitzer. (AD-A109 993)

An experiment was conducted using a simulated air defense task that invoked the cognitive demands of command and control decision making. Navy enlisted personnel performed this simulation under various levels of task load to verify that performance in the simulation is consistent with actual operations. As expected, decision performance became poorer as track load was increased. A marked performance deficit occurred when the task demands exceeded the human's processing limit. The addition of a second task that was performed concurrently further degraded performance by increasing the overall task demand. A theoretical framework was presented to explicate decision performance in the air defense simulation.

Male and Female Performance in Ten Traditionally Male Navy Ratings. TR 82-32. February 1982. L. T. Pope. (AD-A111 423)

A total of 979 persons (802 men and 177 women; 887 whites and 92 blacks) participated in the study. They were asked to complete a sex-race bias test, to rate members of their work group, and to complete attitude and opinion questionnaires.

HUMAN PERFORMANCE (Continued)

Comparison of peer ratings showed that the overall performance of women was not significantly different from that of men. When pay grade and rating were considered, the performance of blacks was not substantially different from that of whites.

Human Memory Limitations in Multi-object Tracking. TR 82-48. June 1982. F. L. Greitzer, R. T. Kelly, and R. L. Hershman. (AD-A117 586)

Basic performance data were obtained on the effect of critical task variables in unaided multi-object tracking behavior. Six observers viewed computer-generated displays in which five, seven, or nine objects represented targets that moved in random linear trajectories at one of two speeds. Displayed positions were updated six times at intervals of 5, 8, 13, or 18 seconds, and no track history was provided. The task for the observer was to monitor the trajectories and then predict the next position of each object. Results showed that the unaided observer can keep track of up to about seven moving objects. Performance improved as the interval between updates was increased to about 13 seconds. These variables interact in their effects on tracking performance and may be traded off in a complex manner.

SPECIAL REPORTS

Examining the Feasibility of a Remote Communications Assistance Concept. SR 82-15. February 1982. W. A. Nugent. (AD-A111 525)

Delays encountered when off-ship technical assistance is required to correct equipment casualties may be detrimental to overall operational readiness. Mission-essential equipment may be out of service for a long period of time before it can be repaired by a designated technical expert. One possible way to reduce the amount of time that a ship spends in a degraded state of equipment readiness at sea is to link expert repair technicians on shore to deployed units of the fleet using modern satellite communications technology. This report describes a controlled land-based test of the remote maintenance assistance concept and identifies factors that may affect the efficiency of such a procedure when troubleshooting Navy equipment casualties.

Operator Performance on Two Office Data Entry System Testbeds: Preliminary Analyses. SR 82-16. February 1982. E. R. N. Robinson, J. S. Malone, and R. W. Obermayer. (AD-A111 535)

This effort tested the effectiveness of two computerized data entry systems designed to improve operator efficiency and reduce the number of errors in Navy personnel records. Data were collected on operator performance times and the quantities of errors made using a stand-alone system and a distributed data entry system that used an off-site computer in tandem with an on-site microprocessor. Preliminary analyses of data obtained were conducted to assess user acceptance so that modifications, if needed, could be implemented before the system was installed. Results showed that the distributed office data entry system provided a distinct advantage over the self-contained system in reducing errors in the information system without adding to the office workload. Also, using this distributed system to make changes resulted in a 75 percent time savings over the manual method. The time saved in making changes would be, by itself, a significant factor in evaluating the cost effectiveness of systems employing computer data bases.

HUMAN PERFORMANCE (Continued)

Skill Retention and its Implications for Navy Tasks: An Analytical Review. SR 82-21. April 1982. R. E. Hurlock and W. E. Montague. (AD-A114 211)

Relevant research literature was reviewed to identify probable variables contributing to skill loss in the Navy. Findings were grouped into five categories-- personnel characteristics, task variables, training factors, job conditions, and retraining factors. One of the most important causes of skill deterioration is nonuse. This can occur when there are infrequent opportunities to practice or perform a skill or when feedback is absent or inadequate. The most important retention variable is the amount of learning acquired before nonuse. This learning is influenced by ability level, task complexity, quality of practice, and feedback conditions. In addition to these variables and the recall conditions, skill deterioration is controlled by the length of the nonutilization period. Retraining can be quickly achieved by a variety of methods; it is affected by the same variables as initial learning.

Problems in Operating the 1200 psi Steam Propulsion Plant: An Investigation. SR 82-25. May 1982. H. L. Williams, L. T. Pope, P. S. Pulu, and D. H. Sass.

An investigation of the problems in operating the 1200 psi steam propulsion plant showed that the skill levels of operating personnel often are not sufficient to operate plant equipments properly and safely. The following factors contributed to this problem: (1) complexity of plant equipment, (2) shortage of middle pay grade (E-5 and E-6) petty officers, and (3) a high turnover rate of shipboard engineering plant personnel. Other problems include poor accessibility and poor layout of valves and gauges, poor gauge design, poor labeling, and inadequate operating procedures. These problems increase the workload, probability of operating errors, and difficulty of training, thus contributing to an increase in skill levels required to operate plant equipment.

TECHNICAL NOTES

Test of a Decision Model as a Decision-making Aid for Human Factors Design Problems. TN 82-5. January 1982. R. A. Newman.

The primary objective of this study was to explore the use of an existing decision-making model as a computerized decision-making aid for solving human factors design problems. A second and broader objective was to find or develop ways to help decision makers structure, evaluate, and interpret the data available to them, especially for subjective evaluation. Such a technique would not change the subjective nature of decisions, but it would provide a better understanding of the utility and significance of the data.

Performance Measurement Using an Auditory Monitoring Task. TN 82-7. February 1982. R. A. Newman.

The overall objective of this work was to develop a performance test usable aboard ships. The specific objectives were to (1) extend an earlier test, which used an auditory monitoring task, to determine the reliability and sensitivity of the extended form and to assess the feasibility of using it for performance testing aboard ship, (2) obtain baseline data in the laboratory for use as a reference for comparison with any future shipboard measurements and earlier published literature, and (3) determine requirements for test equipment and ship support for administering the test at sea.

HUMAN PERFORMANCE (Continued)

Evaluation of Nuclear Weapons Security Personnel Reliability Program Effectiveness.
TN 82-8. February 1982. W. J. Stinson.

This report describes an evaluation of security personnel reliability screening procedures.

An Improved Air Defense Simulation for the Tektronix 4054. TN 82-26. August 1982.
R. L. Hershman and F. L. Greitzer.

This report documents modifications to a simulation system for research in human performance in command and control operations.

R&D METHODS AND TECHNIQUES

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Performance Test Objectivity: A Comparison of Rater Accuracy and Reliability Using Three Observation Forms. TR 82-30. February 1982. W. A. Nugent, G. J. Laabs, and R. C. Panell. (AD-A111 077)

The study examined two variables that may influence the consistency and accuracy of rater's judgments in evaluating job performance: (1) the precision with which behaviors to be observed and evaluated are specified on a performance observation form and (2) the level of proficiency of the rater at the task being evaluated.

Empirical Comparison of Binary and Continuous Proximity Measures for Clustering Occupational Task Data. TR 82-36. March 1982. J. J. Pass and R. E. Chatfield. (AD-A112 930)

Thirteen binary and three continuous proximity measures were used to cluster-analyze job incumbent profiles of task inventory data. The results were compared (1) to recommend a binary measure for programming into CODAP System 80, a software package used extensively by the military and many other organizations, and (2) to determine to what extent binary measures can produce cluster solutions similar to solutions based on continuous measures. Sixteen 250-by-250 proximity matrices were derived from each of three Navy occupational samples, and the clustering procedure in CODAP was applied to selected matrices. Proximity matrix and cluster solution comparison revealed that (1) there was high variability among binary measures, (2) the Jaccard and Dice measures were the most powerful binary measures, and (3) there was high similarity between the Jaccard and distance measures. The implications of the findings are discussed with reference to the proportion of zero scores in task inventory data. The Jaccard measure is recommended for clustering binary data for tasks and for programming into CODAP System 80.

Expectancy Theory Modeling. TR 82-56. August 1982. P. Horst. (AD-A119 128)

An objective of this effort was to reformulate expectancy theory in organizational behavior in objective terms and measurable concepts, employing sound multivariate models. Although a vast amount of literature in organizational behavior has been generated by expectancy theory since 1964, this literature has not been substantially influenced by the traditional models of multivariate analysis. Further development and application of expectancy theory requires a better methodological and mathematical foundation than is currently provided.

SPECIAL REPORT

A System for Assessing User Response to NAVPERSRANDCEN R&T&E Products. SR 82-29. June 1982. H. H. Rosen. (AD-A117 719)

NAVPERSRANDCEN has developed a user-oriented system for assessing user response to Center products. In this system, a report on a Center product and an evaluation request are mailed to previously identified users for appropriate action. Results indicate that the system has great potential for initiating and maintaining a productive dialogue between researchers and operational consumers. Data provided

R&D METHODS AND TECHNIQUES (Continued)

can be used to improve the quality of R&D management decisions by offering both long-term trend information and immediate feedback regarding product utilization.

TECHNICAL NOTES

Optimal Item Difficulty for the Three-parameter Normal Ogive Response Model.
TN 82-1. J. H. Wolfe. October 1981.

The purpose of this research is to determine the optimal difficulty under the three-parameter normal ogive model and to compare it with the optimal difficulty under the three-parameter logistic model.

Protocol Environment Package (PEP): A User's Manual. TN 82-2. December 1981.
M. D. Williams.

This study sought to design and build the first version of a protocol environment package (PEP) that would allow the collection of student-tutor interactions in usable formats for modern protocol analysis techniques. Also, PEP was to provide facilities for the incremental substitution of a human tutor. PEP is designed to run on the Center's PDP-11/70 under the UNIX operating system.

Rational Approximations to the Item Information Function. TN 82-3. January 1982.
J. H. Wolfe.

The research reported here was conducted to develop ways of reducing the amount of computation required to search and evaluate a pool of items in order to select the best item for an examinee.

On Models and Methods for Performance Measurement. TN 82-11. March 1982.
W. J. Moonan. (AD-A113 578)

Models were specified and methods defined that characterize performance measurement as a process and as a function of (1) the performer's capability, (2) variables that indicate how well job operations are performed, and (3) the difficulties of those operations. The report shows methods of mathematical measurement model development that relate (1), (2), and (3) above. A performance quality model was defined. Illustrations of two performance models were provided through examples.

The Enlisted Survival Tracking File (STF): A Revision. TN 82-27. September 1982.
K. W. Gay and J. I. Borack. (AD-A119 717)

This report supersedes NPRDC Technical Note 81-11 of April 1981. It provides an update of the Enlisted Survival Tracking File (STF), a data base that permits analysis of the longitudinal behavior of individuals or groups of individuals. STF has been used to forecast personnel losses.

BIBLIOGRAPHIES, REVIEWS, AND SUMMARIES

TECHNICAL REPORTS

Consolidated Bibliography--Unclassified Technical Reports, Special Reports, and Technical Notes: FY 1974 Through FY 1981. TR 82-34. February 1982. (AD-A113 719)

This report lists all unclassified technical reports, special reports, and technical notes that have been published by the Center from FY 1974 through FY 1981. Publications in each category are listed in chronological order under seven areas: education and training, organization management, personnel administration, human performance, manpower management, R&D methods and techniques, and bibliographies, reviews, and summaries.

Bibliography--Technical Reports, Special Reports, and Technical Notes: FY 1981. TR 82-38. March 1982. (AD-A113 798)

This report lists all technical reports, special reports, and technical notes that have been published by the Center in FY 1981. Publications in each category are listed in chronological order under seven areas: education and training, organization management, personnel administration, human performance, manpower management, R&D methods and techniques, and bibliographies, reviews, and summaries.

SPECIAL REPORTS

Navy Job-related Male-Female Differences: Annotated Bibliography. SR 82-23. April 1982. D. M. Johnson. (AD-A114 388)

This bibliography presents the results of a literature review to identify areas in which research has shown that males and females differ significantly and that might account for male-female performance differences on Navy jobs traditionally held by men. The long-range objective of the project was to identify principles for job design for equal performability by men and women.

Independent Research and Independent Exploratory Development at the Navy Personnel Research and Development Center--FY81. SR 82-27. June 1982. B. Rimland. (AD-A117 630)

This report provides synopses of FY81 IR/IED projects, the IR/IED funding profile, and a list of publications and presentations on IR/IED projects. It also includes extended articles on IR or IED efforts that have been developed over several years.

TECHNICAL NOTES

Human/Computer Transaction Tasks: An Annotated Bibliography. TN 82-14. May 1982. J. G. Casali. (AD-A114 800)

This report provides an annotated bibliography of references relating to human/computer transactions. Operator-analyst and software programmer roles are represented by the majority of the references. Topics covered include display formatting, error modeling, performance assessment, query languages, keyboard and data entry, data organization, and speech input/output.

BIBLIOGRAPHIES, REVIEWS, AND SUMMARIES (Continued)

The Civilian Work Force in Military Organizations: An Annotated Bibliography.
TN 82-15. May 1982. T. J. Koslowski, L. A. Broedling, and S. W. Duckrow. (AD-A114 888)

There are approximately 300,000 federal civil service employees in the Navy work force and 1,000,000 in the Department of Defense. The productivity and effectiveness of these employees have a tremendous impact on military operational readiness. Despite their numbers and importance, surprisingly little written information exists concerning this population. This report provides an annotated bibliography for those interested in the civilian work force in military organizations.

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